Autodesk Fusion 360 AI Designer

Target Audience

This course is designed for students, aspiring product designers, mechanical engineers, CAD professionals, makers, innovators, and engineering teams who want to learn modern product design using Autodesk Fusion 360 enhanced with AI-powered workflows. It is suitable for beginners seeking a strong foundation in Fusion 360 as well as professionals looking to improve productivity through Autodesk Fusion Assistant and Claude-powered design workflows. The course focuses on practical design skills, AI-assisted engineering workflows, and industry-ready product development practices.

Course Outcomes

- Understand Autodesk Fusion 360 design workflows and cloud collaboration features
- Create fully constrained sketches and parametric design models
- Develop professional 3D parts and assemblies
- Apply advanced modeling techniques for product development
- Create manufacturing-ready engineering drawings and documentation
- Utilize Autodesk Fusion Assistant to improve design productivity
- Leverage Claude for design research, concept generation, and engineering support
- Apply AI-assisted workflows to accelerate product development
- Optimize engineering designs through intelligent decision-making techniques
- Complete an end-to-end product design project using Fusion 360 and AI tools
- Build industry-ready skills for product design and engineering roles

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Course Objectives

- Develop a strong foundation in Autodesk Fusion 360 fundamentals
- Build proficiency in sketching, modeling, assemblies, and technical documentation
- Introduce AI-assisted design workflows for modern engineering environments
- Enable learners to use Autodesk Fusion Assistant for productivity enhancement
- Train participants to integrate Claude into engineering and design processes
- Demonstrate practical AI applications in product development

- Reinforce learning through hands-on labs and project-based exercises
- Prepare learners for real-world product design and engineering workflows

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Course Outline

The course comprises **40-hours of theory and labs** and is divided into **14 different chapters**. Each chapter will be followed by hands-on lab exercises to reinforce learning and gauge understanding of the topics covered.

Table of Contents

Chapter 1. Getting Started with Fusion 360 and AI Design Workflows

- Introduction to Autodesk Fusion 360
- Understanding Cloud-Based Product Development
- Installing and Configuring Fusion 360
- Working with the Fusion 360 User Interface
- Working with Workspaces
- Managing Projects Using the Data Panel
- Saving and Version Management
- Sharing and Collaborating on Designs
- Working in Offline Mode
- Introduction to Autodesk Fusion Assistant
- Understanding the Role of AI in Product Design
- Introduction to Claude for Design Workflows

Chapter 2. Sketching Fundamentals

- Creating New Design Files
- Creating and Managing Sketches
- Working with Sketch Planes
- Setting Units and Grid Preferences
- Drawing Lines and Construction Geometry

- Creating Rectangles, Circles, and Arcs
- Creating Slots, Polygons, and Ellipses
- Working with Splines and Organic Curves
- Sketch Editing Techniques
- Projecting and Converting Geometry
- Sketch Visibility and Management
- Best Practices for Sketch Creation
- Using AI Assistance for Sketch Development

Chapter 3. Parametric Design and Design Intent

- Applying Geometric Constraints
- Applying Dimensional Constraints
- Fully Defining Sketches
- Understanding Design Intent
- Creating User Parameters
- Creating Parametric Relationships
- Working with Expressions
- Modifying and Updating Parametric Designs
- Managing Design Variations
- Creating Flexible and Reusable Models
- AI-Assisted Parameter Optimization

Chapter 4. Creating 3D Models

- Creating Extrude Features
- Creating Revolve Features
- Working with Construction Geometry
- Creating Construction Planes
- Creating Construction Axes
- Creating Construction Points

- Editing Features and Sketches
- Projecting Geometry Between Features
- Working with Multiple Sketch Profiles
- Managing Design History
- Navigating 3D Models Efficiently
- Building Robust Design Models

Chapter 5. Advanced Part Modeling

- Creating Sweep Features
- Creating Loft Features
- Creating Rib Features
- Creating Web Features
- Creating Emboss Features
- Creating Holes
- Creating Threads
- Creating Pipes and Tubing
- Creating Coils and Helical Geometry
- Creating Complex Engineering Shapes
- Working with Advanced Modeling Workflows

Chapter 6. Model Modification and Optimization

- Creating Fillets
- Creating Chamfers
- Creating Shell Features
- Creating Draft Features
- Using Press Pull Operations
- Combining Solid Bodies
- Splitting Faces
- Splitting Bodies

- Offsetting Faces
- Applying Material Properties
- Customizing Material Properties
- Evaluating Physical Properties
- Measuring and Inspecting Models
- Improving Design Efficiency

Chapter 7. Design Reuse and Productivity Tools

- Creating Rectangular Patterns
- Creating Circular Patterns
- Creating Patterns Along a Path
- Mirroring Features
- Mirroring Bodies
- Reusing Design Elements
- Creating Reusable Components
- Standardizing Design Workflows
- Design Productivity Techniques
- Managing Design Libraries
- Improving Modeling Efficiency

Chapter 8. Assemblies and Motion Studies

- Creating Components
- Building Assemblies
- Managing Assembly Structures
- Applying Assembly Joints
- Working with Rigid Joints
- Working with Revolute Joints
- Working with Slider Joints
- Understanding Degrees of Freedom

- Motion Simulation
- Interference Detection
- Assembly Validation Techniques
- Assembly Best Practices

Chapter 9. Technical Drawings and Documentation

- Creating Drawing Sheets
- Creating Base Views
- Creating Projected Views
- Creating Section Views
- Creating Detail Views
- Applying Dimensions
- Adding Annotations
- Creating Parts Lists
- Creating Bills of Materials
- Creating Manufacturing Documentation
- Drawing Standards and Best Practices
- Exporting Engineering Drawings

Chapter 10. Working with Autodesk Fusion Assistant

- Introduction to Autodesk Fusion Assistant
- Understanding Assistant Capabilities
- Finding Commands Faster
- AI-Based Design Guidance
- Workflow Recommendations
- Design Troubleshooting Techniques
- Improving Modeling Efficiency
- Productivity Tips and Shortcuts
- Design Optimization Recommendations

- Real-World Design Scenarios
- Best Practices for AI-Assisted Design

Chapter 11. Using Claude for Product Design

- Introduction to Claude
- Understanding Engineering Prompting Techniques
- Writing Effective Design Prompts
- AI-Assisted Design Research
- Product Concept Development
- Product Feature Exploration
- Material Selection Support
- Manufacturing Recommendations
- Design Review and Feedback
- Engineering Documentation Assistance
- Product Development Support Using Claude

Chapter 12. AI-Powered Product Development Workflow

- Product Ideation Using AI
- Defining Product Requirements
- Concept Evaluation Techniques
- Design Decision Support
- AI-Assisted Engineering Calculations
- Product Optimization Strategies
- Rapid Design Iteration
- AI-Assisted Problem Solving
- Collaboration with AI Tools
- Building Efficient Product Development Workflows
- Future Trends in AI-Driven Design

Chapter 13. Product Design Capstone Project

- Project Planning and Requirement Definition
- Product Concept Creation
- Design Research Using Claude
- AI-Assisted Design Planning
- Parametric Modeling Workflow
- Assembly Development
- Technical Documentation Creation
- Design Review with Claude
- Productivity Enhancement Using Fusion Assistant
- Design Optimization and Refinement
- Final Product Presentation

Chapter 14. Professional Design Practices and Career Readiness

- Product Design Best Practices
- Engineering Workflow Management
- Design Review Methodologies
- Portfolio Development Guidelines
- Design Presentation Techniques
- Cloud Collaboration Workflows
- Industry Use Cases
- Career Opportunities in Product Design
- Working with AI in Engineering Environments
- Autodesk Certification Guidance
- Course Wrap-Up and Next Steps